

Survival of the Richest

by [Andrew W. Lo](#)

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In financial markets, as in many human endeavors, there's a battle between reason and madness. On one side are the disciples of the efficient-markets hypothesis: the notion that markets fully, accurately, and instantaneously incorporate all relevant information into prices. These adherents assume that market participants are rational, always acting in their own interest and making mathematically optimal decisions. On the other side are the champions of behavioral economics: a younger discipline that points to bubbles, crashes, panics, manias, and other distinctly unreasonable phenomena as evidence of irrationality.

It's hard to deny that investors act irrationally from time to time, yet behavioralists have so far failed to offer an alternative to supplant the efficient-markets hypothesis, which does brilliantly explain many economic occurrences and has had an enormous impact on modern financial theory and practice. Both approaches seem to have compelling explanatory power in their own right, yet they have opposing premises:

rationality versus human psychology. How can the efficient-markets hypothesis and behavioral economics ever be reconciled? Perhaps by looking to Charles Darwin instead of Adam Smith.

Efficient markets and behavioral economics *can* coexist in the same universe where markets, and the behavior of their participants, evolve. A new approach, which I call the “adaptive-markets hypothesis,” describes just such a framework. Based on well-known principles of evolutionary biology—competition, mutation, reproduction, and natural selection—the adaptive-markets hypothesis shows how these forces, as they act on individual investors and institutions, influence the efficiency of markets and the waxing and waning of investment products, businesses, industries, and, ultimately, fortunes.

The adaptive-markets hypothesis begins with the premise that individual behavior is a collection of rules of thumb, or heuristics, produced through a process of natural selection. As in nature, investors learn to behave in ways that are conducive to survival. If the environment remains stable for long periods, we’ll end up with heuristics that are appropriate for that environment. If the environment shifts, certain heuristics may no longer be helpful. Those who adapt to the new environment by developing a better set of heuristics will prosper and be more likely to pass on those adaptations to subsequent generations.

Individuals in financial markets develop heuristics to address various economic challenges. For example, value investors have developed a heuristic that involves purchasing stocks when market prices are below their intrinsic values, and, over time, this approach has been successful. However, when the environment changes, as it did in the U.S. stock market between 1992 and 2000, existing heuristics may be ill suited to the new environment. In such cases, we may observe behavioral biases, actions that seem irrational. For instance, the fabled value investor Julian Robertson experienced enormous losses during the late 1990s and, as a result, closed his hedge fund in March 2000. In retrospect, we know that Robertson's heuristics would have been extraordinarily successful had he persisted with them for just a few months longer, when the market environment swung from growth to value once again.

Under the adaptive-markets hypothesis, behavioral biases abound. The origins of such biases are, in many cases, heuristics that have been carried over from nonfinancial contexts. For example, certain forms of "irrational" risk-taking behavior, such as the tendency to take bigger risks during a losing streak, may have actually given our hunter-gatherer ancestors advantages in the wild but serve people poorly in financial markets today. The richness of market dynamics comes from the interactions of people with different heuristics, in much the same way that the richness of the Amazon rainforest is created by the interactions of different species, each with its own adaptive strengths and weaknesses. After the U.S. stock market crash of 1929, for instance, most U.S. investors became highly risk averse, thereby decreasing the

supply of capital to the stock market and yielding a higher equity-risk premium (the difference between the expected return on stocks and a safe asset, such as government bonds). By contrast, the current population of investors in the stock market consists of a large proportion of younger and apparently more risk-tolerant individuals who developed their heuristics during a period of great economic prosperity. Not surprisingly, when measured over the past few years, the equity-risk premium has declined. Are current investors irrational, or were the investors around the time of the Great Depression irrational? The answer is neither. Preferences are shaped by the forces of natural selection operating in a given economic environment, so we shouldn't expect the investors of the 1930s to behave like the investors of the 1990s.

In the realm of adaptive markets, “rational” and “biased” become less meaningful qualities than “fit” and “adaptable.” Instead of competing for food, water, and mates, market participants compete for wealth, and the selection of the most successful businesses reinforces heuristics that produce wealth. The extraordinary competitiveness of global financial markets and the outsize rewards that go to the fittest players suggest that Darwinian selection is at work in determining the profile of the successful investor. After all, unsuccessful market participants—the ones who continue to make maladaptive decisions—are eventually eliminated from the population. In the dog-eat-dog world of the adaptive-markets hypothesis, it's survival of the richest.

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